DEFENSE NUCLEAR FACILITIES SAFETY BOARD

January 12, 2001

TO: J. Kent Fortenberry, Technical Director
FROM: Paul F. Gubanc and David T. Moyle, Oak Ridge Site Representatives
SUBJ: Activity Report for Week Ending January 12, 2001

Mr. Moyle was on leave Monday and Tuesday, and Mr. Gubanc was on leave Friday. Staff members Blackman and Helfrich reviewed the status of Y-12 project management corrective actions this week.

A. Y-12 Project Management (PM): On April 3, 2000, DOE submitted separate PM corrective action plans (CAPs) for itself and the contractor. Implementation was started and initially showed some signs of developing rational solutions to the problem. By July 2000, major elements of both the DOE and contractor plans were being suspended. Based on the staff's review this week, it became clear that while many corrective actions have been completed, managers of some affected programs (such as Quality Assurance and Procurement) are no longer using the CAPs as the basis for solving their problems. On a positive note, it does appear that YAO is taking action to determine the extent of their PM problems and develop new CAPs. We are uncertain, though, how BWXT intends to respond to the issues contained in the Board's November 9, 1999 letter. BWXT management are focused on solving the PM problems with paper (i.e., policy and procedures) and have not addressed the issue of incomplete working level implementation which has been a recurring problem at Y-12.

The safety basis of the Highly Enriched Uranium Materials Facility (HEUMF) is improving and is addressing several of the comments made by the staff last July. BWXT safety analysts recognize the need to clearly define the confinement boundary, and believe that safety class structure, HEPA filtered ventilation, and air locks are appropriate. (1-C)

B. Y-12 Enriched Uranium Operations (EUO) - Reduction: On Friday, we met with EUO personnel to discuss issues raised by Mr. Moyle's review of the reduction vessel analytical information. We were pleased to learn that void volume calculations are being revised to incorporate the liner cover and to account for product densities at the reaction temperature. These calculation changes will affect the allowable batch size to ensure that pressure will not exceed a specified limit.

Also important to pressure management is an understanding of the appropriate error to apply to a sample value such that it will confidently bound the true moisture content of a UF_4 batch. An attempt has been made by BWXT to quantify the analytical measurement error attributable to laboratory moisture analysis, but we are not yet convinced that this value is appropriate. We also question whether UF_4 batches exhibit enough homogeneity to confidently determine moisture content with only one sample. Data shows significant variability (up to a factor of 5) in different samples taken from the same batch of UF_4 at different times. It is possible that the extremely low moisture levels measured may be at the precision limits of the analytical equipment and not representative of reality. Additionally, it is possible that small variations in analysis technique could have profound effects on the results. It is interesting to note that the samples being analyzed have absolute moisture contents on the order of 0.001g while one cubic foot of air at 70°F and 20% relative humidity contains approximately 0.1g of water. EUO now intends to engage the analytical laboratory personnel to better understand the moisture sampling and analysis process, and ensure that the process has been qualified and demonstrated to achieve reproducible results. We will continue to follow this issue in the coming weeks. (2-A)

cc: Board Members